Crestron **FT-TS600**
FlipTop™ Touch Screen
Operations & Installation Guide

Regulatory Compliance

This product is Listed to applicable UL Standards and requirements by Underwriters Laboratories Inc.

As of the date of manufacture, the FT-TS600 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada (IC) Compliance Statement

CAN ICES-3(B)/NMB-3(B)

The specific patents that cover Crestron products are listed at patents.crestron.com.

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FlipTop Touch Screen: FT-TS600

Introduction

The FT-TS600 FlipTop™ Touch Screen by Crestron® provides a configurable control and connectivity solution in a stylish, flush mount tabletop design. Flipping open the "FlipTop" lid exposes a brilliant 5" (127 mm) color touch screen, gracefully angled for easy operation and viewing. The built-in connection compartment keeps interface cables and connectors at the ready for plugging in laptop computers, mobile devices, AV source, and other equipment.

Features and Functions

- Flush mount tabletop control and connectivity in one stylish FlipTop design
- Integrated 5" capacitive color touch screen with Smart Graphics™[1] support
- High performance H.264 streaming video over Ethernet
- Seamless integration with Crestron DigitalMedia
- 5 soft-touch capacitive buttons for common functions
- Hands-free audio conferencing using Rava™ SIP intercom technology[2]
- Customizable audio feedback
- Built-in microphone and speaker
- Balanced line out for amplification of the speaker signal
- PoE+ (Power over Ethernet) 1-wire touch screen communication and power
- Configurable connection compartment allows versatile combinations of pull-out cables, cable retractors, connector plates, and AC power outlets
- Tapered cable notch allows lid to be closed with cables plugged in
- Universal cutout size fits all new and future FlipTops
- Black anodized or brushed aluminum finish

1. Supports Smart Graphics only. Not compatible with "traditional" UI projects.
2. Supports audio conferencing with another Rava-enabled device over an IP network, or with any telephone device through integration with a SIP-compatible phone system or SIP server.

The FlipTop Touch Screen is an ideal complement to a DigitalMedia™ transmitter or any other AV interface device. It provides an intuitive and inviting "front end" for the more complex and mundane technology hidden away beneath the tabletop. The integrated touch screen can provide control for an entire room, offering a fully customizable user interface for selecting presentation sources, adjusting audio levels, dimming the lights, and even calling for lunch service. Advanced capabilities include displaying full-motion video and hands-free audio conferencing.[1]

FlipTop Design

Handsomely finished in a choice of black anodized or brushed aluminum, Crestron FlipTops lend a contemporary metallic accent to conference tables and podiums. The FT-TS600 installs cleanly in virtually any flat, horizontal surface up to 1 3/4" (44 mm) thick. Beveled edges provide for a nearly flush appearance.

The FlipTop lid flips open with just the tip of a finger to access the touch screen and connection compartment. Once connections and touch screen settings are made, the lid can be closed. A generous, tapered notch at the front of the lid opening allows interface cables to remain connected even when the lid is closed.

Connection Compartment

The FT-Ts600 is highly configurable to provide a well organized connectivity solution tailored to each unique application. It provides options for both pullout and panel-mounted connectors, with or without AC power outlets. It comes standard with two cable pass-through plates and four blank plates, all of which can be swapped out for a choice of cable retractors, connector plates, and AC power outlet modules.

- **Cable Pass-Through Plates** – Each cable pass-through plate provides four grommeted holes to accommodate Crestron Certified Interface Cables[2] and other AV, data, and communication cables. The user end of each cable stows neatly within the connection compartment ready for use while excess cable simply drops out of sight below the cable pass-through plate. The grommets provide a smooth, slippery surface for easy pullout of each cable. Blank caps are also provided to cover any unused holes. The cable pass-through plates are positioned at the left and right sides of the connection compartment. The FT-TS600 supports one or two cable pass-through plates. Two are included.
- **Cable Retractors** – For an even more refined cable management solution, the FT-TS600 accommodates up to six Crestron CBLR Cable Retractors[2]. Crestron cable retractors feature a patent pending, lever actuated retraction mechanism that ensures smooth operation while eliminating hanging cable loops beneath the table. Up to three cable retractors can be installed in place of each cable pass-through plate, allowing for a total of six cable retractors.
- **Connector Plates** – If panel mounted connectors are preferred, the FT-TS600 can accommodate up to four FTA-CP Connector Plates[2]. Connector plates are offered with a variety of common AV and data connector types. Custom connector plates may also be fabricated by the installer using the blank plates provided. All four connector plates are positioned at the center of the connection compartment.

1. Supports audio conferencing with another Rava-enabled device over an IP network, or with any telephone device through integration with a SIP-compatible phone system or SIP server.
2. Item(s) sold separately.

- **AC Power Outlet Modules** – To provide power for laptops and other portable devices, the FT-TS600 can be equipped with up to four AC power outlets. A single FTA-PWR-102 Dual AC Power Outlet Module[1] can be installed in place of the center two connector plates or two FTA-PWR-102s can be installed in place of all four connector plates.

Integrated 5" Touch Screen

The FT-TS600 features a large 5" (127 mm) capacitive touch screen display that wakes when the FlipTop lid is opened and goes to sleep when the lid is closed. Smart Graphics technology provides a stunning custom user interface with fluid gesture-driven controls, animated feedback, metadata, embedded apps, and high performance H.264 video. Five soft-touch capacitive buttons are also provided for quick access to commonly used functions.

Streaming Video

High performance streaming video capability makes it possible to preview a video source during a presentation or see a live camera image while video conferencing, right on the FlipTop screen. Support for H.264 and MJPEG formats allows the FT-TS600 to display streaming video from a Web camera, a streaming server (Crestron CEN-NVS200[1] or similar), or a DigitalMedia switcher[1, 2]. Video is delivered to the touch screen over Ethernet, eliminating the need for any extra video wiring. For more information on video streaming, refer to Answer ID #5195 at http://support.crestron.com/app/answers/detail/a_id/5195/kw/streaming%20video.

Hands-Free Audio Conferencing

Using Rava SIP intercom technology, the FT-TS600 enables hands-free VoIP communication between any two Rava-enabled Crestron touch screens. Rava works over Ethernet, supporting audio conferencing[3], intercom, video intercom[4], paging, and room monitoring without any special wiring. VoIP phone capability is also possible through integration with a SIP-compatible IP phone system or SIP server, allowing hands-free telephone and teleconferencing functionality complete with speed dialing, caller ID, custom ringers, and other enhancements. Built-in echo cancellation affords true duplex performance for clear, seamless voice communication using the FT-TS600's integrated microphone and speaker.

Line Output

In addition to its onboard speaker, the FT-TS600 includes a balanced line level audio output, allowing the speaker signal to be routed to the room's audio system. Amplifying the FlipTop's audio signal through the room speakers enhances its audio conferencing capabilities, allowing a small group of individuals to participate in a conference call using a single FT-TS600.[2]

1. Item(s) sold separately.
2. Streaming output is currently available on the following DigitalMedia switcher modules: DM-MD8X8, DM-MD8X8-RPS, DM-16X16, DM-16X16-RPS, DM-32X32, and DM-32X32-RPS.
3. Supports audio conferencing with another Rava-enabled device over an IP network, or with any telephone device through integration with a SIP-compatible phone system or SIP server.
4. H.264 compatible IP camera required.

Power over Ethernet

Using PoE+ technology, the FT-TS600 gets its operating power right through the LAN wiring. PoE eliminates the need for a local power supply or any dedicated power wiring. A PoE+ capable power source (CEN-SWPOE-16, sold separately, or similar) is required to power the FT-TS600.

Specifications

Specifications for the FT-TS600 are listed in the following table.

FT-TS600 Specifications

SPECIFICATION	DETAILS
Touch Screen Display	
Display Type	TST active matrix color LCD
Size	5 inch (127 mm) diagonal
Aspect Ratio	15:9 WVGA
Resolution	800 x 480 pixels
Brightness	300 nits (cd/m^2)
Contrast	450:1
Color Depth	24-bit, 16.7 million colors
Illumination	Edgelit LED
Viewing Angle	±69º horizontal, +62º /-64º vertical
Touch Screen	Projected capacitive
Buttons	
Hard Keys	(5) Projected capacitive push buttons, programmable, pre-labeled with icons for “Power”, “Home”, “Lights”, “Up”, and “Down”
Memory	
LPDDR2 RAM	1 GB
Flash	4 GB
Maximum Project Size	512 MB
Graphics Engine	Supports Smart Graphics*
Communications	
Ethernet	10/100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP, IEEE 802.3at Type 2 compliant
Video	
Streaming Formats	H.264 (MPEG-4 part 10 AVC), MJPEG
Audio	
Features	Built-in microphone and speaker, Rava SIP Intercom, line out (same signal as speaker)
Audio Feedback Format	MP3
Power Requirements	
Power over Ethernet	IEEE 802.3at Type 2 Class 4 PoE+ powered device

(Continued on following page)

FT-TS600 Specifications (Continued)

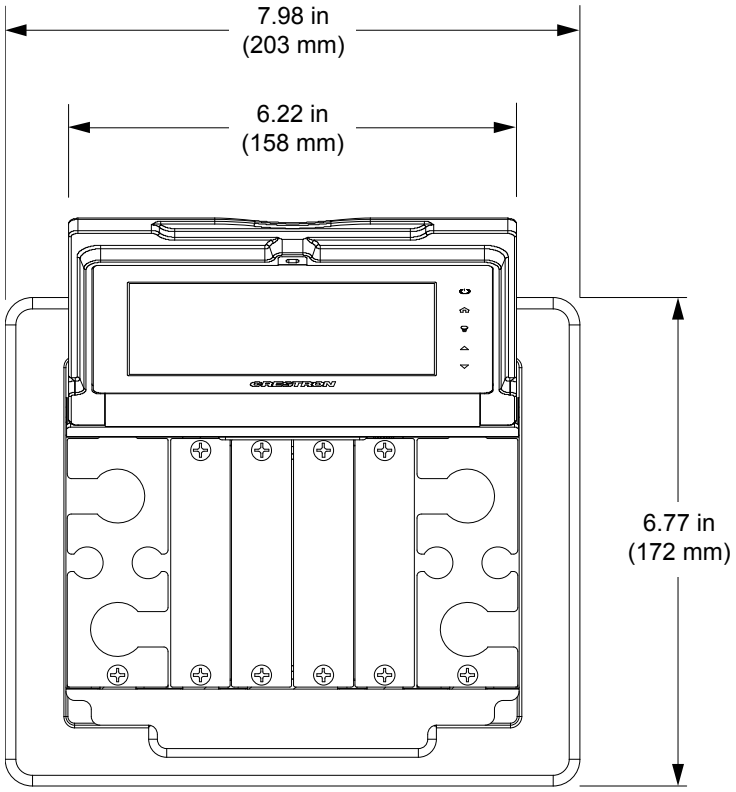
SPECIFICATION	DETAILS
Environmental	
Temperature	32º to 112º F (0º to 45º C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	46 Btu/h
Enclosure	
Chassis	Metal, black
Cover	Aluminum, black anodized or brushed aluminum finish
Mounting	Flush tabletop mount, 1 3/4 in (44 mm) maximum surface thickness, 6 1/4" (159 mm) deep x 7 1/2 in (190 mm) wide cutout (template provided)
Dimensions	
Height	7.06 in (180 mm) 10.80 in (275 mm) with lid open
Width	7.98 in (203 mm) 9.19 in (234 mm) with mounting brackets
Depth	6.77 in (172 mm) 7.88 in (200 mm) with lid open
Weight	5.1 lb (2.3 kg)
Available Models	
FT-TS600-B	FlipTop Touch Screen, Black Anodized
FT-TS600-BALUM	Flip Top Touch Screen, Brushed Aluminum [Special Order]
Available Accessories	
CBL Series	Crestron Certified Interface Cables
CBLR Series	Cable Retractors
CBLRA-BRKT-3-H	Horizontal Mounting Option for CBLR
CBLRA-INSERT-2WIRE	2-Wire Insert for Cable Retractor Option
CBLRA-INSERT-BLANK	Blank Insert for Cable Retractor Option
CEN-NVS200	Network Video Streamer
CEN-SWPOE-16	16-Port Managed PoE Switch
FTA-CP-DP-101	FlipTop DisplayPort Connector Plate
FTA-CP-HDMI-101	FlipTop HDMI Connector Plate
FTA-CP-RCA-103	FlipTop 3 RCA Connector Plate
FTA-CP-RJ45-102	FlipTop 2 RJ45 Connector Plate
FTA-CP-USB-102	FlipTop 2 USB Connector Plate
FTA-PWR-102	FlipTop Dual AC Power Outlet Module, NEMA 5
VMK-WIN	TouchPoint® Virtual Mouse & Keyboard Software for Windows®

* Supports Smart Graphics only. Not compatible with "traditional" UI projects.

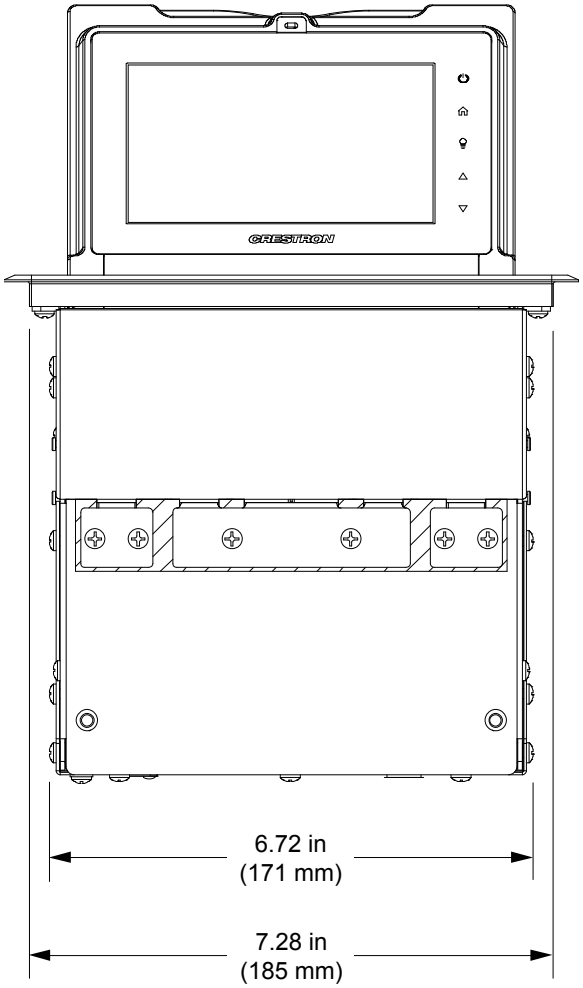
Physical Description

This section provides information on the connections, controls, and indicators available on the FT-TS600.

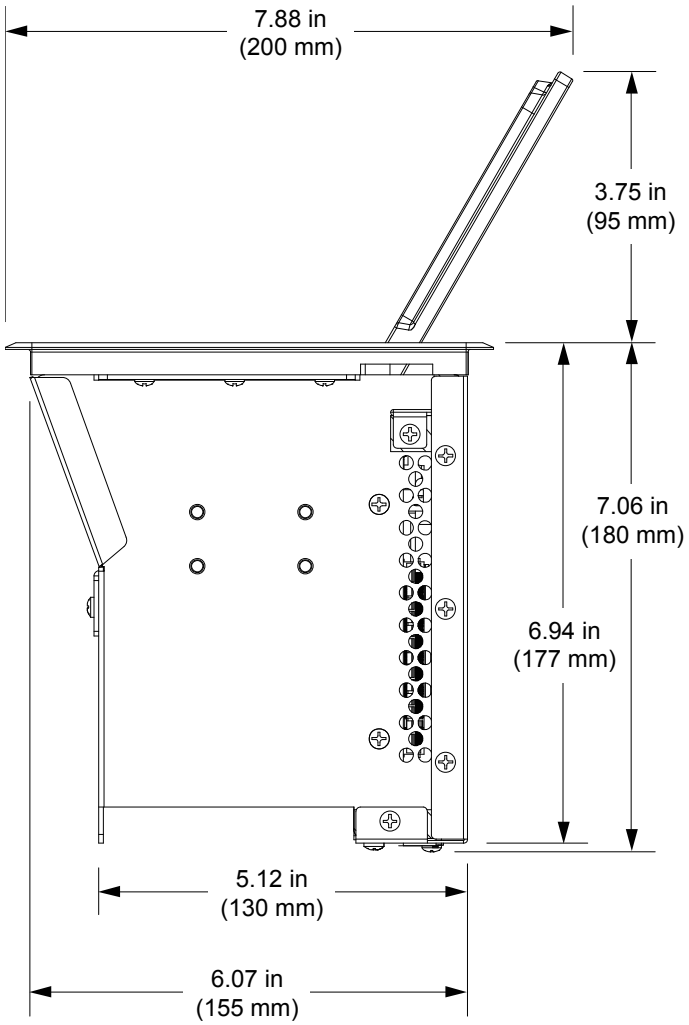
FT-TS600 Overall Dimensions (Top View)



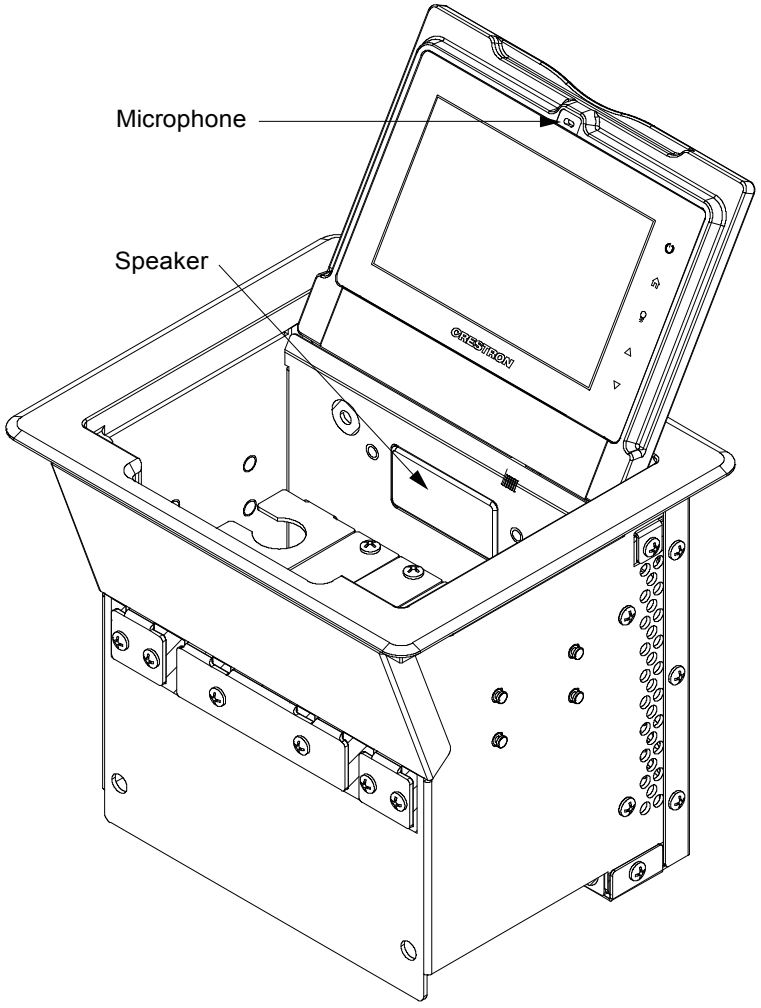
FT-TS600 Overall Dimensions (Front View)



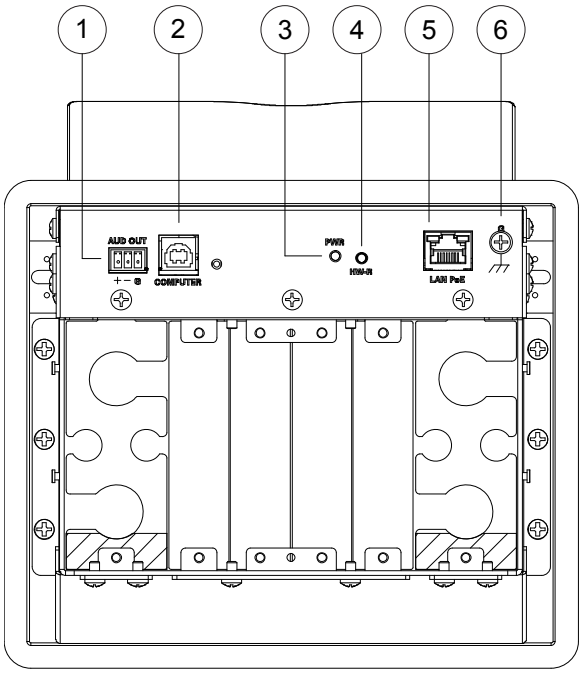
FT-TS600 Overall Dimensions (Side View)



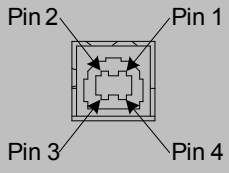
FT-TS600 (Oblique View)



FT-TS600 (Bottom View)

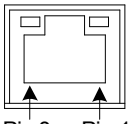


Connectors, Controls, and Indicators

#	CONNECTORS[1], CONTROLS, AND INDICATORS	DESCRIPTION
1	AUD OUT + – G	(1) 3-pin 3.5 mm detachable terminal block; Balanced mono line level audio output; Output impedance: 100 Ω; Maximum output level: 4 Vrms
2	COMPUTER  Pin 2 Pin 1 Pin 3 Pin 4	(1) USB Type B female; USB computer console port (cable included) **PIN** / **DESCRIPTION** 1 – +5 Vdc 2 – Data - 3 – Data + 4 – Ground
3	PWR LED	(1) Dual color LED; Yellow indicates operating power supplied via PoE; Green indicates device is ready
4	HW-R Button	(1) Recessed miniature push button for hardware reset

(Continued on following page)

Connectors, Controls, and Indicators (Continued)

<table>
<tr><th>#</th><th>CONNECTORS[1], CONTROLS, AND INDICATORS</th><th>DESCRIPTION</th></tr>
<tr><td>5</td><td>LAN PoE[2]
 
</td><td>(1) 8-pin RJ-45 with two LED indicators;
10BASE-T/100BASE-TX Ethernet port;
Power over Ethernet compliant;
Green LED indicates link status;
Yellow LED indicates Ethernet activity
<table><tr><th>PIN</th><th>DESCRIPTION</th></tr><tr><td>1</td><td>TX +</td></tr><tr><td>2</td><td>TX -</td></tr><tr><td>3</td><td>RX +</td></tr><tr><td>4</td><td>DC +</td></tr><tr><td>5</td><td>DC +</td></tr><tr><td>6</td><td>RX -</td></tr><tr><td>7</td><td>DC -</td></tr><tr><td>8</td><td>DC -</td></tr></table></td></tr>
<tr><td>6</td><td>G (Ground)
 </td><td>(1) 6-32 screw, chassis ground lug</td></tr>
</table>

1. An interface connector for the **AUD OUT** port is provided with the unit.
2. PoE+ dc power can also be available on a TX/RX pair.

Setup

Network Wiring

When wiring the Ethernet network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.

Unlike other Crestron network devices, the FT-TS600 does not use Cresnet® for communications between the device and the control system. The FT-TS600 requires the use of a high-speed Ethernet connection for control system communications.

For general information on connecting Ethernet devices in a Crestron system, refer to the Crestron e-Control® Reference Guide (Doc. 6052) at www.crestron.com/manuals.

Identity Code

NOTE: The latest software can be downloaded at www.crestron.com/software.

The IP ID is set within theFT-TS600's IP table using Crestron Toolbox™. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multipleFT-TS600 devices in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the Crestron Studio™ or SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

Configuring the Touch Screen

NOTE: The only connection required to configure the touch screen is power. Refer to "Hardware Hookup" on page 28 for details.

NOTE: The FT-TS600 can take up to 45 seconds to boot to a display after initial power up.

Access the Setup Screens

The "Setup" menu is the starting point for configuring the FT-TS600.

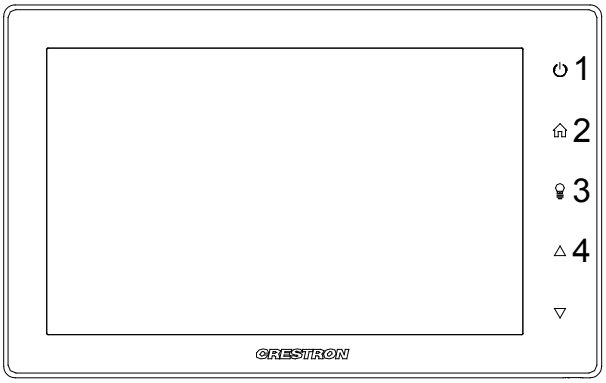
NOTE: If no project has been loaded or if an invalid project has been loaded, the screen displays a message saying "There is no display project to start. [Touch Screen to Enter Setup…]"

The setup screens enable basic configuration procedures prior to regular operation of the touch screen.

During regular operation of the touch screen, there are two ways to activate the setup functions:

1. Place a button on the project main page and assign the reserved join number (17242) that activates setup.
2. Press hard keys 1, 2, 3 and 4, to the right of the touch screen display, in sequence twice (i.e., press 1, 2, 3, 4, 1, 2, 3, 4) within a 5 second period.

Button Numbering



The "Setup" menu is displayed.

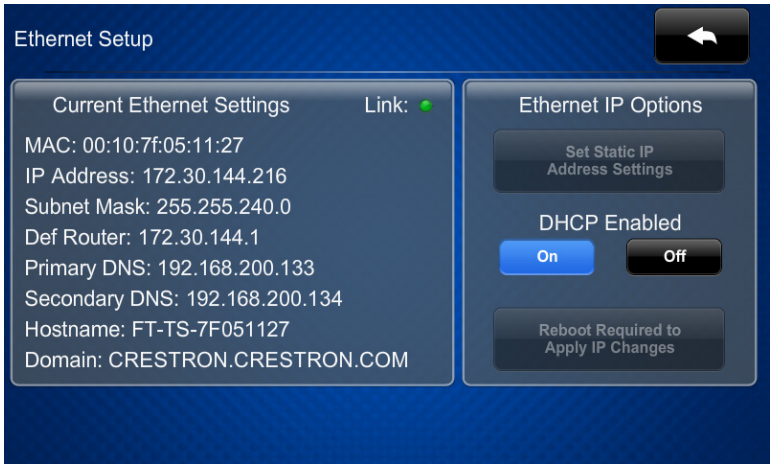
"Setup" Menu

The "Setup" menu is comprised of buttons for **Ethernet Setup**, **IP Table Setup**, **Audio Setup**, **Display Setup**, **Standby Timeout** and **Diagnostics**. In addition, there is an **About** button that provides information about the touch screen and a **Save & Exit** button. The functions of each are detailed in the following pages of this guide.

Ethernet Setup

On the "Setup" menu, touch **Ethernet Setup** to display the "Ethernet Setup" menu.

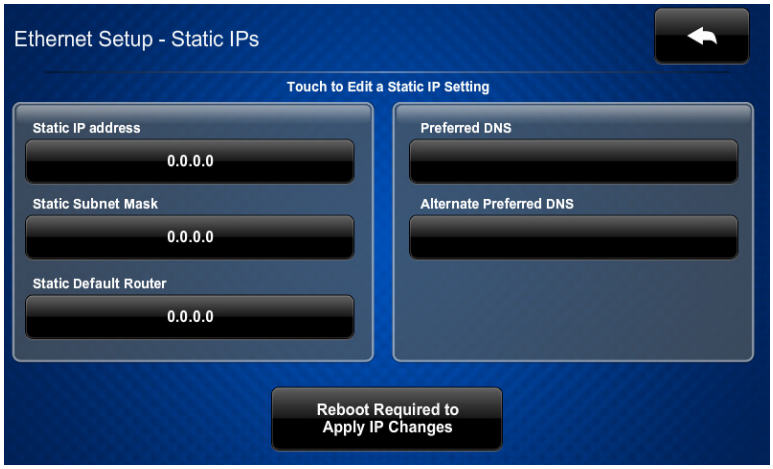
"Ethernet Setup" Menu



The "Ethernet Setup" menu displays the touch screen's *Mac* and *IP Address*, *Subnet Mask*, *Def Router*, *Primary DNS*, *Secondary DNS*, *Hostname* and *Domain*. There are controls for turning *DHCP* **On** or **Off** as well as a **Set Static IP Address Settings** button, which provides access to controls which allow editing of these settings. This screen also contains a *Link* indicator to show the status of the Ethernet connection.

Touch **Set Static IP Address Settings** to display the "Ethernet Setup – Static IPs" screen.

"Ethernet Setup – Static IPs" Screen



To edit the *Static IP Address*, *Static Subnet Mask*, *Static Default Router*, *Preferred DNS* or *Alternate Preferred DNS*, touch the button directly under the label for the entry to edit. The on-screen numeric keypad opens.

On-Screen Numeric Keypad

Use the keypad to make the new entry. Touch the "x" in the text field to clear any previous entry. Touch to delete the last digit. Touch **Save** to save a new entry or to return to the "Ethernet Setup – Static IPs" screen.

After new settings have been saved, touch **Reboot Required to Apply IP Changes** on the "Ethernet Setup – Static IPs" screen to reboot the touch screen, so the new settings can take effect.

If not making any changes, touch to return to the "Ethernet Setup" menu.

Touch again to return to the "Setup" menu.

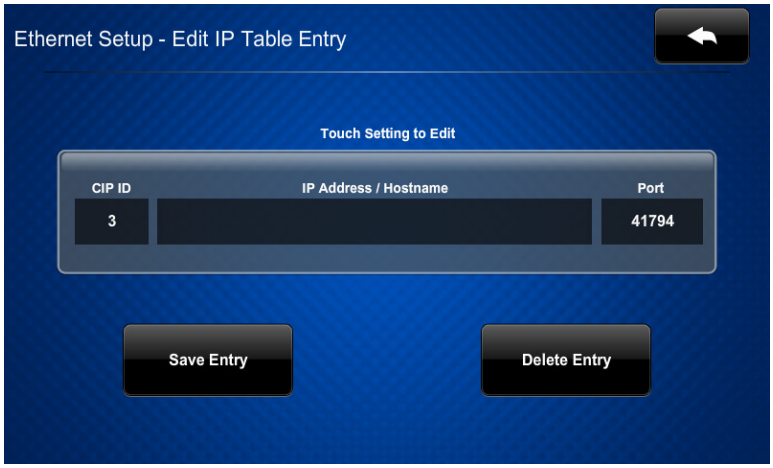
IP Table Setup

On the "Setup" menu, touch **IP Table Setup** to display the "Ethernet Setup – IP Table" menu.

"Ethernet Setup –IP Table" Menu

The "Ethernet Setup – IP Table" menu displays up to four IP table settings, each of which has an *Online* indicator. To add or edit an entry, touch the **Add/Edit** button to its left. The "Ethernet Setup – Edit IP Table Entry" screen is displayed.

"Ethernet Setup –Edit IP Table Entry" Screen



Touch the field below *CIP ID* to display the on-screen hex keypad.

On-Screen Hex Keypad

Use the keypad to make the new entry. Touch the "x" in the text field to clear any previous entry. Touch to delete the last digit. Touch **Save** to save a new entry or to return to the "Ethernet Setup – Edit IP Table Entry" screen.

Touch the field below *IP Address/Hostname* to display the on-screen keyboard.

On-Screen Keyboard

Use the keyboard to make the new entry. Touch **Cancel** to return to the "Ethernet Setup – Edit IP Table Entry" screen. Touch the "x" in the text field to clear any previous entry. Touch to delete the last digit. Touch **Save** to save a new entry and return to the "Ethernet Setup – Edit IP Table Entry" screen.

On the "Ethernet Setup – Edit IP Table Entry" screen, touch **Save Entry** to save the current entry or **Delete Entry** to clear it.

If not making any changes, touch to return to the "Ethernet Setup –IP Table" menu.

Touch again to return to the "Setup" menu.

Audio Setup

On the "Setup" menu, touch **Audio Setup** to display the "Audio Setup" screen.

"Audio Setup" Screen

The "Audio Setup" screen provides controls for muting (or unmuting) the audio, adjusting level for both *Master Volume* and *Media Volume*, as well as a control for playing a test .wav file. The *Media Volume* controls adjust H.264 streaming media

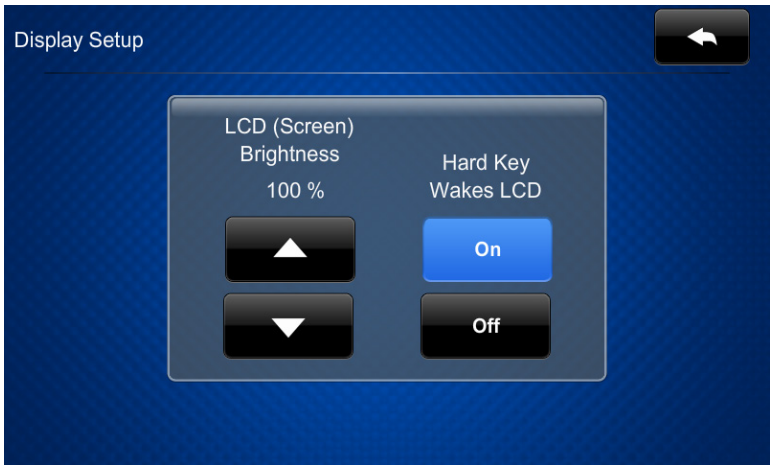
level in relation to the *Master Volume* controls. Use *Audio Select* to choose whether audio plays through the internal speaker or via the line output.

Touch to return to the "Setup" menu.

Display Setup

On the "Setup" menu, touch **Display Setup** to enter the "Display Setup" screen.

"Display Setup" Screen



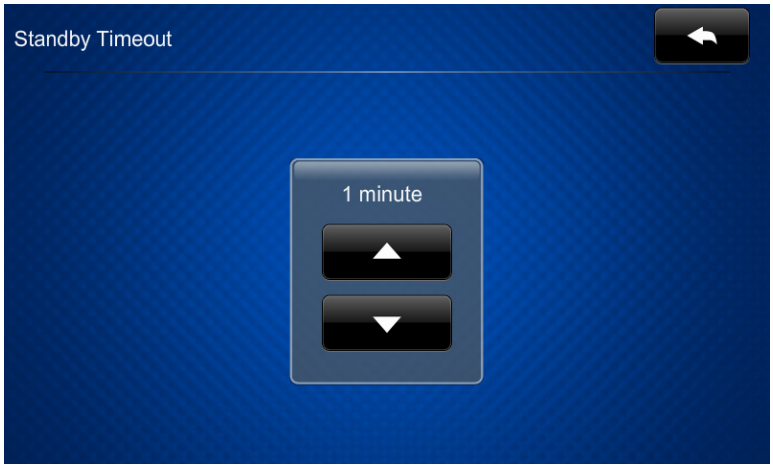
The "Display Setup" screen provides controls for *LCD (Screen) Brightness* and **On** and **Off** controls for *Hard Key Wakes LCD*.

Touch to return to the "Setup" menu.

Standby Timeout

On the "Setup" menu, touch **Standby Timeout** to display the "Standby Timeout" screen.

"Standby Timeout" Screen



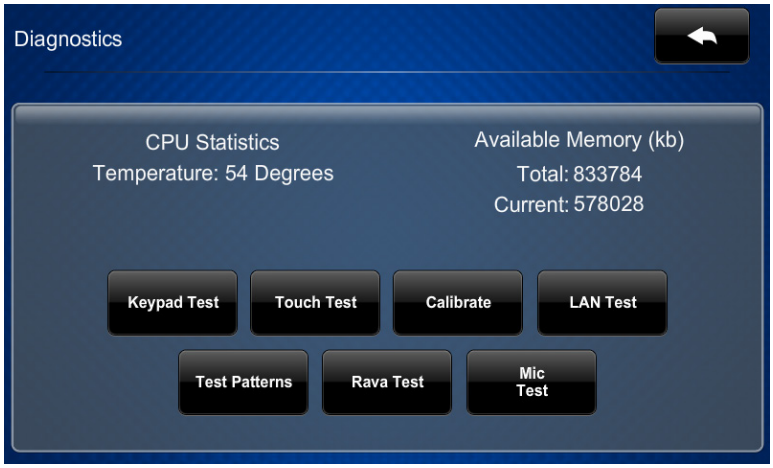
The "Standby Timeout" screen provides controls to adjust standby timeout from 0 to 120 minutes.

Touch to return to the "Setup" menu.

Diagnostics

On the "Setup" menu, touch **Diagnostics** to display the "Diagnostics" menu.

"Diagnostics" Menu

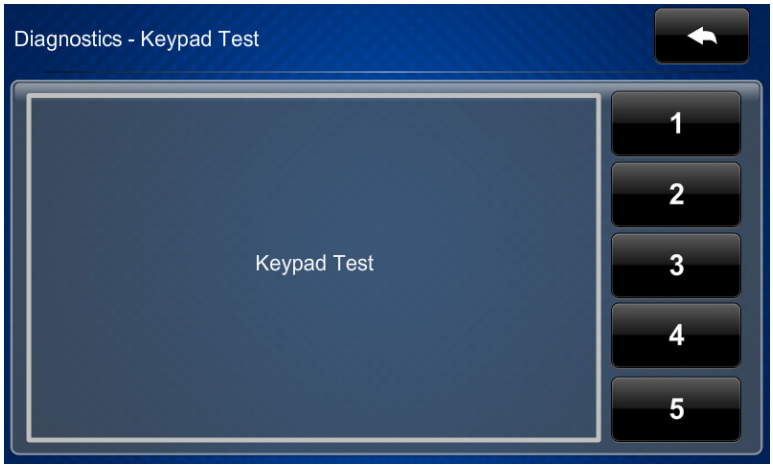


The "Diagnostics" menu displays the CPU temperature, *Available Memory* and contains controls to run a **Keypad Test**, **Touch Test**, **LAN Test**, **Rava Test**, and **Mic Test**. In addition there are controls to initiate touch screen calibration and to open various test screens. These are explained in the paragraphs that follow.

Keypad Test

On the "Diagnostics" menu, touch **Keypad Test** to display the "Diagnostics – Keypad Test" screen.

"Diagnostics – Keypad Test" Screen



The "Diagnostics - Keypad" screen can be used to test the function of the hard key push buttons on the right side of the screen. When a button is pressed, its corresponding indication on the screen lights.

Touch to return to the "Diagnostics" menu.

Touch Test

On the "Diagnostics" menu, touch **Touch Test** to display the touch test screen.

Touch Test Screen

The touch test screen can be used to test the function of the screen. When a location button (the "x" buttons or the "o" button) is touched, its indication on the screen lights. This screen also contains a **Calibrate** button to initiate touch screen calibration.

During touch screen calibration, a crosshair appears at the center of the screen. Touch the center of the crosshair, which then moves to the upper left part of the screen. Touch the center of the crosshair and it moves to another part of the screen. Continue touching the center of the crosshair until calibration is complete.

NOTE: When touching the screen during calibration, be as accurate as possible.

Touch to return to the "Diagnostics" menu.

Calibrate

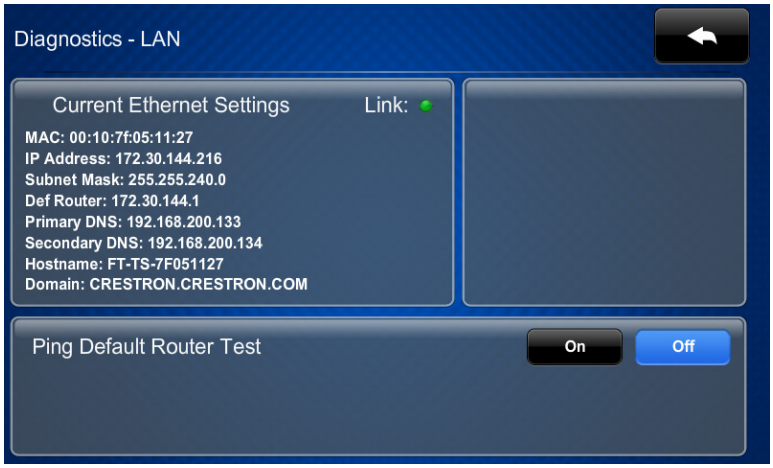
On the "Diagnostics" menu, touch **Calibrate** to initiate the screen calibration procedure. Refer to "Touch Test" above for details.

LAN Test

On the "Diagnostics" menu, touch **LAN Test** to display the "Diagnostics – LAN" screen.

The "Diagnostics – LAN" screen displays current Ethernet settings and contains a *Link* indicator to show the status of the Ethernet connection. A *Ping Default Router Test* control is also provided.

"Diagnostics – LAN" Screen



Test Patterns

On the "Diagnostics" menu, touch **Test Patterns** to display the "Diagnostics - Test Patterns" screen.

"Diagnostics - Test Patterns" Screen

The "Diagnostics - Test Patterns" screen contains buttons for selecting the different available test patterns: **Display Color Bars**, **Display Vertical Lines**, **Display Gray Scale**, **Display Grid Pattern** and **Display Test Pattern**.

Touch to return to the "Diagnostics" menu.

Rava Test

On the "Diagnostics" menu, touch **Rava Test** to display the "Diagnostics – Rava" screen.

"Diagnostics - Rava" Screen

The "Diagnostics - Rava" screen provides controls for testing the use of Crestron's Rava™ SIP Intercom with the FT-TS600. It can be used to test projects and settings. If the intercom works but the project does not, there is an issue with the project; if the intercom does not work, there is an issue with the settings.

Touch to return to the "Diagnostics" menu.

Mic Test

On the "Diagnostics" menu, touch **Mic Test** to begin a microphone test. The touch screen records audio for five seconds and then plays back the recorded sound.

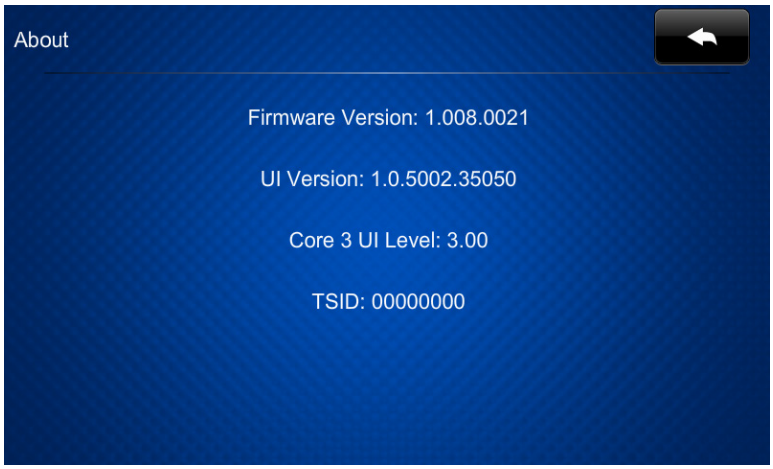
The built-in microphone (located above the touch screen display) will be used to record your voice and play it back to confirm the microphone is functioning. When playback is finished, the display returns to the "Diagnostics" menu.

Touch to return to the "Setup" menu.

About

On the "Setup" menu, touch **About** to display the "About" screen.

"About" Screen



The "About" screen displays information about the touch screen, including the currently loaded firmware and operating system versions.

Touch to return to the "Setup" menu.

Save & Exit

On the "Setup" menu, touch **Save & Exit** to save all settings, exit the setup screens and return to the main project.

Supplied Hardware

The hardware supplied with the FT-TS600 is listed in the following table.

Supplied Hardware for the FT-TS600

DESCRIPTION	PART NUMBER	QUANTITY
Metal, Plate, Mounting	2036985	2
Screw, 10-32 x 2", Steel, Socket HD, Zinc	2037109	4
Small Hole Plug	2036647	4
Large Hole Plug	2036649	4
Small Bushing, 5/16" ID, 0.5" OD	2009522	4
Large Bushing, 0.55" ID, 0.80" OD	2010496	4

Installation

NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consideration must be given if installed in a closed assembly, inside a closed desk or in a closed podium since the operating ambient temperature of these environments may be greater than the room ambient temperature. Contact with thermal insulating materials should be avoided on all sides of the unit.

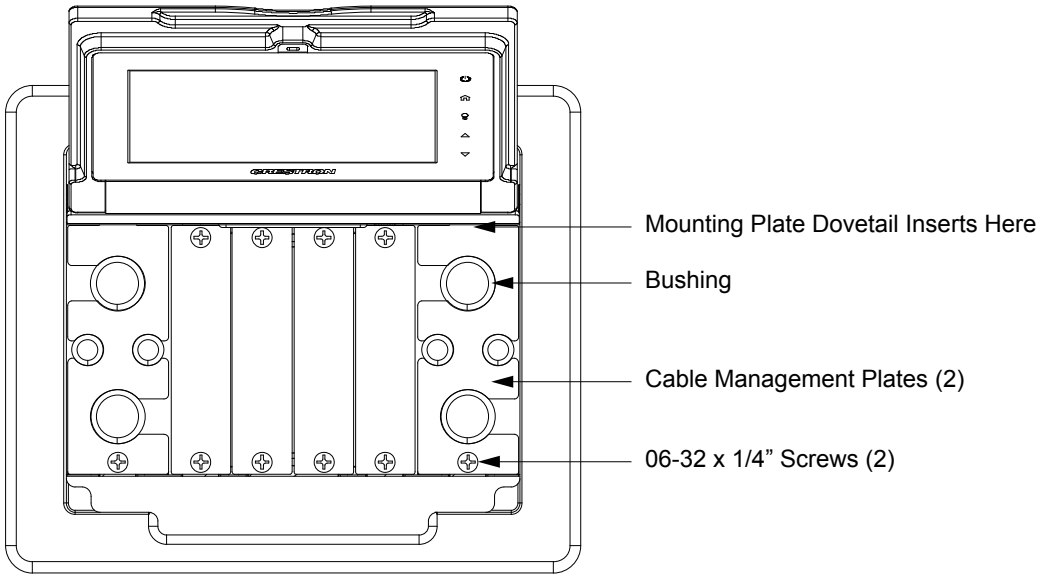
Cable Management Plates

The FT-TS600 ships with two cable management plates pre-installed. These provide a pullout cable solution for the **AUD OUT** (audio output) **COMPUTER** and **LAN** cables. A 6 foot (1.8 meter) USB Type A to Type B cable is included for the **COMPUTER** connection. Cables are looped through the cable management plates.

The included bushings must be installed before mounting the FT-TS600 in a surface. For a neat appearance, any unused openings can be filled using the included hole plugs. The only tool required is a Phillips screwdriver.

1. Remove the two cable management plates and retain the 06-32 x 1/4" screw that holds each one in place.
2. Place the bushings on the cables (eight bushings supplied).
3. Thread the cables through the appropriate slots on each plate.
4. Snap the bushings into the plate slots.
5. Feed all excess cable through the opening.
6. Attach each plate by first sliding its dovetail into the slot toward the rear of the inside of the FT-TS600, then dropping the front into place and securing it with the 06-32 x 1/4" screw from step 1. Refer to the following illustration.

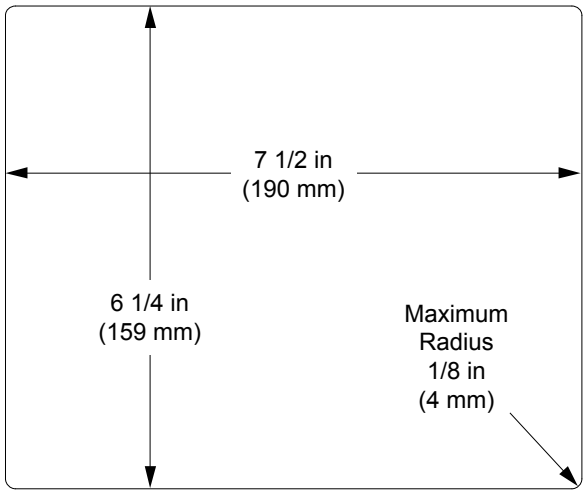
Cable Management Plate Installation



Mounting in a Surface

The FT-TS600 is designed to mount in a horizontal surface, such as a desktop, lectern, or podium. The following diagram illustrates the required opening size to accommodate the FT-TS600. A cutout template (40143) is included.

Cutout Dimensions



NOTE: Before inserting the FT-TS600 in the mounting hole, ensure that all required cables have been installed.

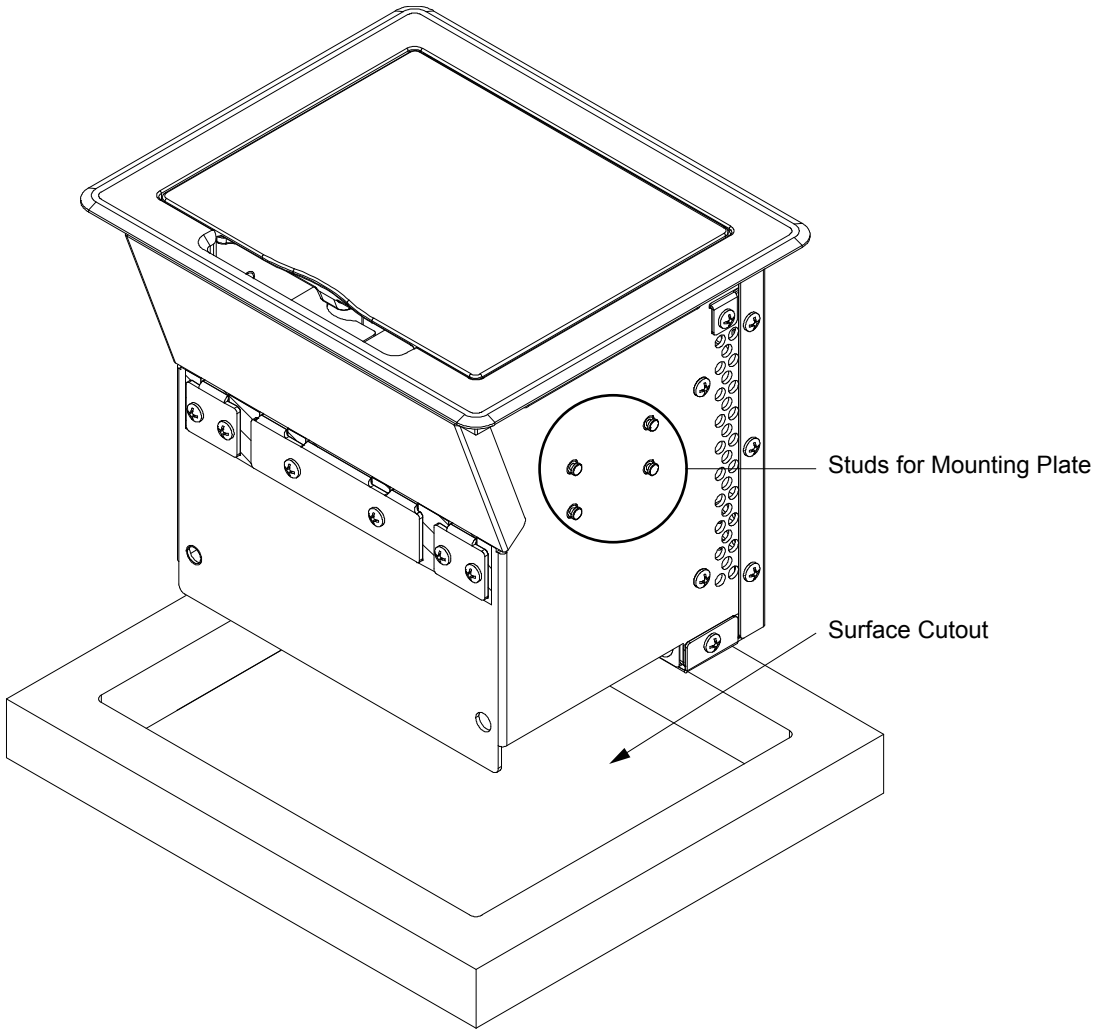
Tools required:

- Phillips screwdriver
- #10 Allen wrench

Use the following procedure to mount the FT-TS600.

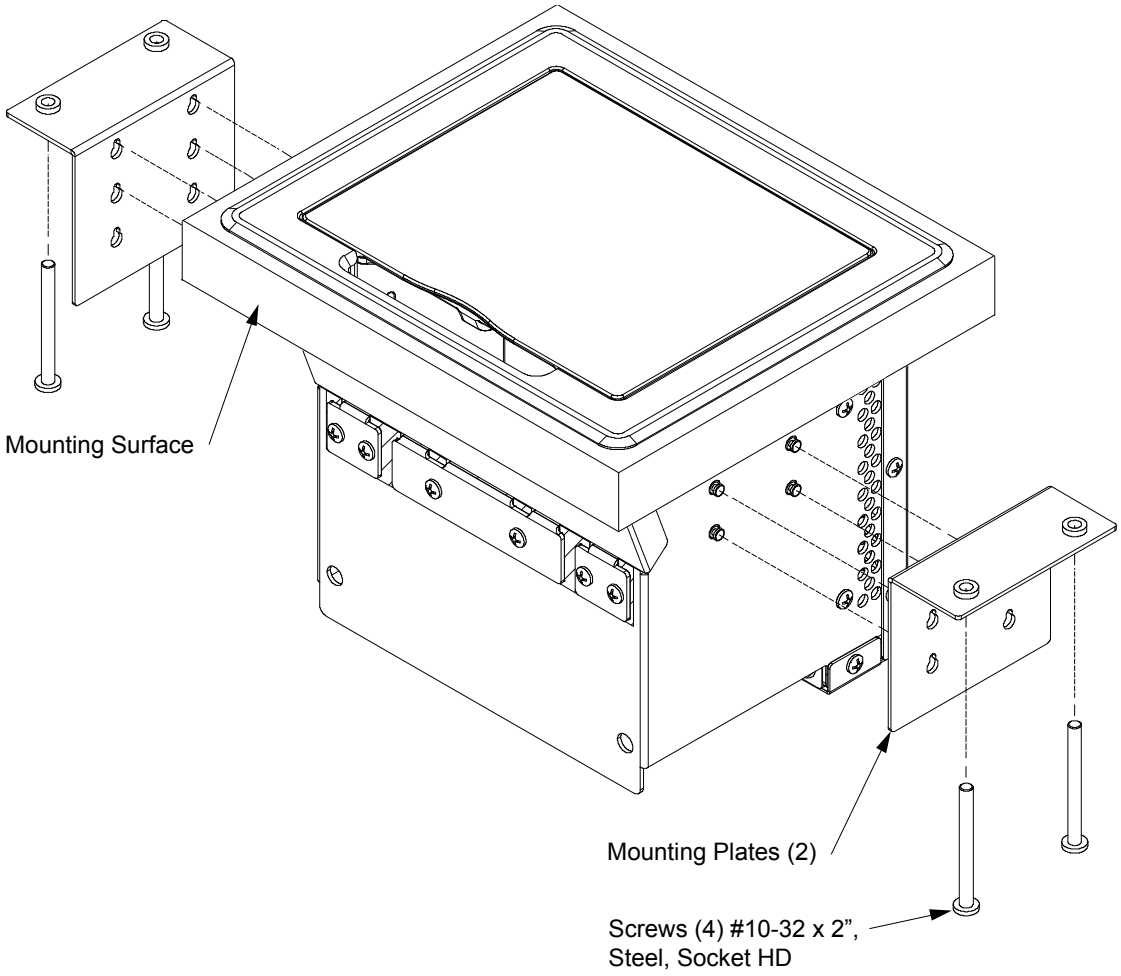
1. Position the FT-TS600 in the mounting hole.

Mounting Plate Stud Locations



2. Install the four #10-32 socket screws (2037109) in the metal mounting plates (2036985) (two screws per plate). Refer to the following illustration.

Mounting Plate Installation



3. Slide the mounting plates over the studs on each side of the FT-TS600.
4. Turn the four #10-32 socket screws equally, until they contact the underside of the mounting surface.

NOTE: Do not overtighten the #10 screws as this may damage the surface or the unit.

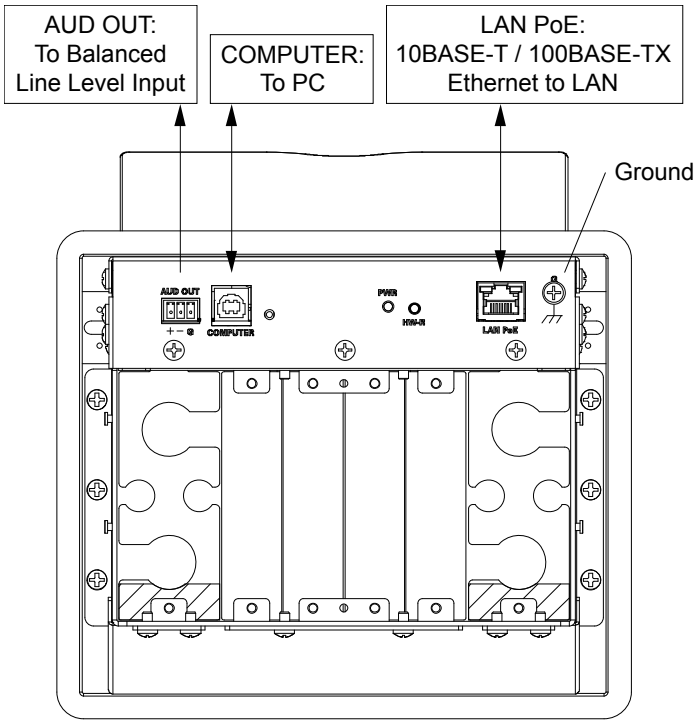
Hardware Hookup

Make the necessary connections as called out in the illustration that follows this paragraph. Apply power after all connections have been made.

When making connections to the FT-TS600, note the following:

- Use Crestron power supplies for Crestron equipment.
- The included cable cannot be extended.

Hardware Connections for the FT-TS600



CAUTION: Do not apply excessive pressure to the touch screen display during handling. Doing so can crack the screen and damage the touch screen.

NOTE: Ensure the unit is properly grounded by connecting the chassis ground lug to an earth ground (building steel).

NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications.

Recommended Cleaning

Keep the surface of the touch screen free of dirt, dust or other materials that could degrade optical properties. Long-term contact with abrasive materials can scratch the surface, which may detrimentally affect image quality.

For best cleaning results, use a clean, damp, non-abrasive cloth with any commercially available non-ammonia glass cleaner. Bezels may not provide a complete watertight seal. Therefore, apply cleaning solution to the cloth rather than the surface of the touch screen. Wipe touch screen clean and avoid getting moisture beneath the bezels.

Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs, projects, or firmware) can be transferred to the control system (or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

NOTE: Crestron software and any files on the Web site are for authorized Crestron dealers and Crestron Service Providers (CSPs) only. New users must register to obtain access to certain areas of the site (including the FTP site).

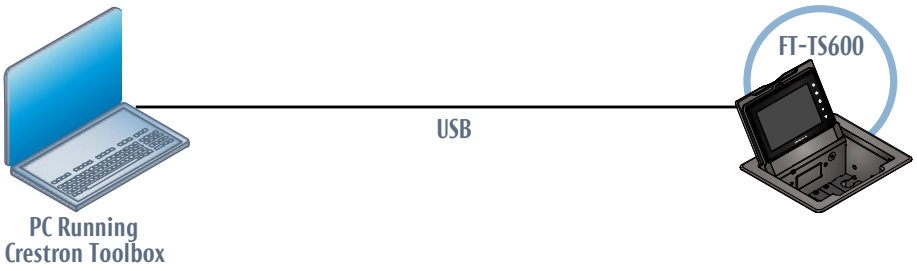
Establishing Communication

Use Crestron Toolbox for communicating with the FT-TS600; refer to the Crestron Toolbox help file for details. There are two methods of communication: USB, and TCP/IP.

USB

NOTE: Required for loading projects and firmware.

USB Communication



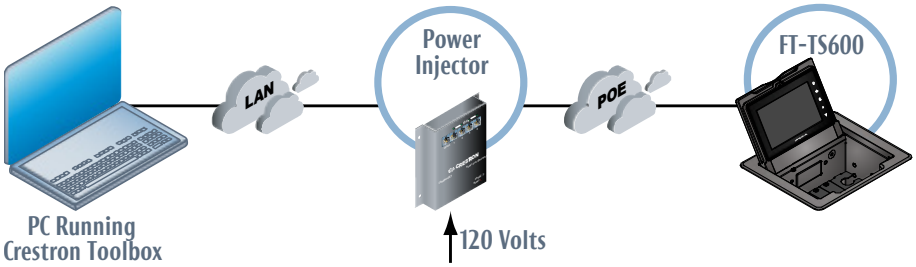
The **COMPUTER** port on the Ft-TS600 connects to the USB port on the PC via the included Type A to Type B USB cable:

1. Click **Tools** | **System Info**.
2. Click the icon.
3. For *Connection Type*, select *USB*. When multiple USB devices are connected, identify the FT-TS600 by entering "FT-TS600" in the *Model* text box, the unit's serial number in the *Serial* text box or the unit's hostname (if known) in the *Hostname* text box.
4. Click **OK**. Communications are confirmed when the device information is displayed.

TCP/IP

NOTE: Required for operation with a Crestron control system.

Ethernet Communication



The FT-TS600 connects to PC via Ethernet:

1. Use the Device Discovery Tool (click the icon) in Crestron Toolbox to detect all Ethernet devices on the network and their IP configuration. The tool is available in Toolbox version 1.15.143 or later.
2. Click on the FT-TS600 to display information about the device.

Programs, Projects, and Firmware

Program, project, or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron Web site as new features are developed after product releases. One has the option to upload programs and projects via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the Crestron Studio help file, SIMPL Windows help file, VT Pro-e® help file, or the Crestron Toolbox help file.

Crestron Studio / SIMPL Windows

If a Crestron Studio (or SIMPL Windows) program is provided, it can be uploaded to the control system using Crestron Studio (or SIMPL Windows) or Crestron Toolbox.

Crestron Studio / VT Pro-e

Upload the Crestron Studio (or VT Pro-e) file to the touch screen using Crestron Studio (or VT Pro-e) or Crestron Toolbox.

Firmware

Check the Crestron Web site to find the latest firmware. (New users must register to obtain access to certain areas of the site, including the FTP site.)

Upgrade FT-TS600 firmware via Crestron Toolbox.

1. Establish communication with the FT-TS600 as described in “Establishing Communication” on page 30.
2. Select **Tools** | **Package Update Tool…** to upgrade the FT-TS600 firmware or double click on an appropriate Package Update File (PUF) located on the hard drive. The Package Update Tool is loaded as a standalone application.

Program Checks

Using Crestron Toolbox, display the "System Info" window (**Tools | System Info**) and select the **Functions** menu to display actions that can be performed on the FT-TS600.

Be sure to use Crestron Toolbox to create the FT-TS600 IP table.

1. Select **Functions | IP Table Setup**.
2. Add, modify or delete entries in the IP table. The FT-TS600 can have only one IP table entry.
3. A defined IP table can be saved to a file or sent to the device.

Edit the control system's IP table to include an entry for the FT-TS600. The entry should list the FT-TS600's IP ID (specified on the FT-TS600's IP table) and the internal gateway IP address 127.0.0.1.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

FT-TS600 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Device does not function.	Device is not communicating with the network.	Use Crestron Toolbox to poll the network. Verify network connection to the device.
	Device is not receiving power from a Crestron power source.	Use the provided Crestron power source. Verify connections.
PWR LED does not illuminate.	Device is not receiving power.	Verify PoE power source is properly attached.
Button press yields incorrect result.	Incorrect programming	Verify the Crestron Studio or SIMPL Windows program.
Loss of functionality due to electrostatic discharge.	Improper grounding.	Check that all ground connections have been made properly.

Reference Documents

All documents mentioned in this guide are available at www.crestron.com/manuals.

List of Related Reference Documents

DOCUMENT TITLE
Crestron e-Control Reference Guide

Further Inquiries

To locate specific information or resolve questions after reviewing this guide, contact Crestron's True Blue Support at 1-888-CRESTRON [1-888-273-7876] or, for assistance within a particular geographic region, refer to the listing of Crestron worldwide offices at www.crestron.com/offices.

To post a question about Crestron products, log onto Crestron's Online Help at www.crestron.com/onlinehelp. First-time users must establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the FT-TS600, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron Web site periodically for manual update availability and its relevance. Updates are identified as an "Addendum" in the Download column.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from Crestron. To obtain warranty service for Crestron products, contact an authorized Crestron dealer. Only authorized Crestron dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a Crestron Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to Crestron, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. Crestron reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by Crestron, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

Crestron Limited Warranty

Crestron Electronics, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from Crestron, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touch screen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from Crestron or an authorized Crestron dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

Crestron shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall Crestron be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. Crestron is not liable for any claim made by a third party or made by the purchaser for a third party.

Crestron shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, Crestron makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

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